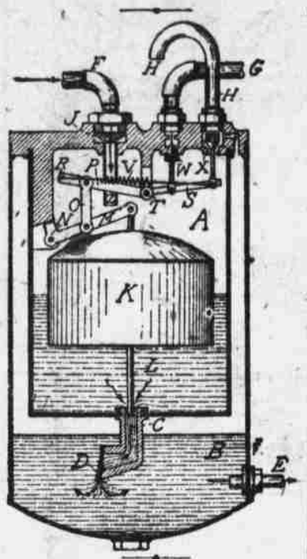
The Technical Features Of the "Vacuum Feed"



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The accompanying diagram shows a typical form of vacuum tank—one of several designs in common use. Here A is the suction or pumping compartment, which communicates with the gravity feed compartment B by means of the passage C, the lower end of which may be closed or opened to B by the swinging plate or "flapper" valve D. E is the gasoline connection from B to the carburetor, F the gasoline connection from A to the main tank, G the suction connection from A to the intake manifold of the engine and H is a tube through which air can enter A, when it is required (and through which air is always free to enter B, to take the place of gasoline that goes to the carburetor. K is a metal float, which rides upon the surface of the gasoline in A, the movement of which is guided by the stem L, the lower end of which fits loosely in passage C.

The upper end of the float stem is pivoted to one end of the jointed lever M, the other end of which is mounted on a stationary pivot at N. One end of the link O is pivoted to M, nearly at its middle point and its other end is pivoted to another lever P, at a point somewhat removed from its free end, the other end of P being held upon a stationary pivot T in the head of the tank. As the float K falls in compartment A, because of the lowering of the gasoline level therein, it swings lever M gradually downward and, through the action of link O, also swings lever P so that its free end is moved downward.

When the float rises, under an increase of gasoline in A, these actions are reversed and the effect of the float motion is gradually to raise and lower the free end R of lever P, as it rises and falls. Another lever S is pivoted at T and operates two valves, one of which W, closes the passage between suction pipe G and compartment A, when it is moved upward and the other of which X opens the connection through air-vent H from the outside air to tank A when it is moved upward—the valve's actions being reversed when S is moved downwardly. S is not operated directly by the float, but by the tension spring V, the action of which as here shown (with the float up) is to raise lever S.

When, however, the float falls to its lower position, spring V passes below the fulcrum point T, through the lowering of R and its pull then acts to suddenly snap lever S down, opening the suction and closing the air vent valves. Lever S thus moves positively and quickly from one extreme position to the other in obedience to float position, whenever spring V is moved past the fulcrum point T.

In the position here shown gasoline is flowing by its own weight from compartment A to compartment B, flapper valve D, opening under its pressure, suction valve W being closed and air vent valve X being open, so that there shall be atmospheric pressure in A and thus no interference to the flow of gasoline into B. As gasoline thus escapes from A, the float falls and R moves downward until spring V acts to throw S into its reverse position and to close air valve X and open suction valve W, when there is immediately a reduction of pressure in A, due to the tendency for air to be drawn from it into the intake manifold through W and G—the entrance of outside air being prevented by the closing of X.

As there is always air pressure on the fuel in B and this is greater than the pressure now acting on the gasoline in A, flapper valve D is forced closed, so that no liquid can return from B to A. There being a partial vacuum thus acting in A and full atmospheric pressure acting in the main tank, gasoline is forced through the delivery tube Z into A, which, of course, causes the float to rise, spring V to pass the fulcrum center, valve W to close and valve X to open, when pumping ceases, the initial conditions are restored, flapper D opens and compartment B is replenished.

These actions repeat themselves indefinitely, while the engine is running, some gasoline always being present in both A and B, and the fuel level in A alternating in height between an upper limit, which brings the float high enough to raise R sufficiently so that the spring snaps S into its upper position and a lower level which causes S to assume its lower position.

FIGHTING FOR TRADE OF TRANSCAUCASIANS

LONDON, April 1.—A lively competition for Transcaucasian trade appears to have sprung up among the American, British and Italian interests working there. The British counsul at Batum in a report published in the Board of Trade Journal states that members of the American relief committees are busily engaged in opening up trade with America. The British still lead in importation he asserts.

The consul states that "hitherto little else but flour and clothing for distribution to Armenian refugees and persons of other nationalities in distress have reached this country from the United States, but the attention which is being paid to the Trans-Caucasus by American interests points to an appreciable increase in American trade in the near future."

The Italian mission, as part of its campaign, has established a fortnightly service of passenger and cargo steamers between Triest and Batum. The route takes the boats through the northern Black sea and stops are made at Caucasian ports.

FIND NO MORE BONES OR SNAKES IN RUBBER

The age of romance in the rubber industry is passing, slowly but surely. And strange to say, the cause for its passing lies in the fact that South America has been supplanted as the source of the main supply of raw rubber by the Orient, the land where romance holds full sway.

Crude rubber used to be filled with interesting relics. Each piece used to furnish mute evidence of the difficulties under which it was obtained and the characteristics of the man who gathered it. But science is changing all that.

Ten years ago most crude rubber was obtained from the jungles of the Amazon valley in Brazil. The trees grew in swampy forests, hundreds of miles from civilization, in places where white men seldom went. Gathering of the rubber was a slow process and the natives resorted to all manner of practices to make their output appear greater than it really was.

As they formed their balls of rubber they included anything they could lay their hands on which would increase its weight—stones, fibrous nuts from palm trees, iron bars, bones of animals, flour and sand, worn-out clothing, and even centipedes and snakes.

The natives had a good excuse for this deceit. They knew when they went into the forests that if they did not return with as much rubber as their masters expected they must pay for their failure with their lives.

All this has changed. Today nine-tenths of all rubber used comes from the plantations of the Orient, where it is gathered, coagulated and shipped under ideal conditions. The rubber reaches the market free from dirt and foreign matter.

Such shipments are exactly the kind wanted by the rubber manufacturer, but nevertheless they do not arouse as much interest as the old kind. In those days the inspectors cut carefully into each "biscuit," fearful of what they might find next. Today every shipment is uniform.—Goodrich.

Through the Committee of Hope, the "Buddies" company has undertaken the care and education of Henri Gey, a French "war orphan."

ELECTRICITY HELPS TO IMPROVE ENAMELING

In the spring a young man's fancy lightly turns to sentimental topics, and, if he is a car owner, he also discovers a new interest in the appearance of his automobile. Spring is the time for housecleaning, both in the home and in the garage. The old bus is washed and polished with renewed enthusiasm.

The fellow who possesses real pride of ownership and wants his car always to look well must give consideration to such matters as body finish and the enameling of fenders when he buys. Next to purely mechanical matters these are the most important features—at least to the man who cares for appearance.

There have been interesting changes in the process of enameling adopted by the more important car makers that have resulted not only in manufacturing economy, but in far finer jobs. Next to the quality of the enamel in which the fenders are dipped the most important factor in the process is the baking or heat treatment.

The heat used to be applied in gas ovens. Now the ovens are heated electrically and much better results obtained because of the higher degree of accuracy and constancy of temperature. The fenders are first thoroughly cleaned with water containing some cleansing material which removes grease, rust and other substances. Then they are dipped in enamel and are carried to the ovens on automatic overhead conveyers, where they are left a specified time. They are then removed, redipped and rebaked. The heat applied is regulated automatically by thermostat devices and can be controlled absolutely and throughout the entire process to the exact degree. In this way the baking job is so efficient that, given proper enamel, the finish does not crack, check or scale.—Paige.